



Faculty Guide to the Systematic Inventive Thinking© (SIT) Method from Inside the Box: A Proven System of Creativity for Breakthrough Results & The Companion - *Innovate! Web App*

“Think outside the box” is an oft-used phrase, brilliantly coined by an advertising executive justifying high fees to his clients. The Systematic Inventive Thinking© (SIT) Method plays “Inside the box” and disproves the myth that creativity belongs to a select few.

What to know about SIT and the Five SIT Techniques

SIT is an innovation method that harnesses five thinking patterns that mankind has used for thousands of years.

SIT has been expanded to cover a wide range of innovation-related phenomena in a variety of contexts. By using SIT, companies have produced breakthrough results in many types of situations.

Surprisingly, the majority of new, inventive, and successful products result from just five patterns: subtraction, division, multiplication, task unification and attribute dependency. These patterns form the basis of SIT.

Table of Contents	Page
The Six SIT Method Axioms	3
The Five SIT Techniques	4
The Four SIT Differentiators	5
Three Examples of SIT Techniques in the Marketplace	6
Instructors' Introduction to Course Syllabus: A Two-step Approach: Instruction and the SIT Innovate! Web App	7
Best Practices for Instructors	7
Final Exam	9
(Sample) Course Syllabus: A Two-step Approach: Instruction and the SIT Innovate! Web App	10
Teaching Subtraction Technique: Step-by-Step Guide and Tips	16
Teaching Division Technique: Step-by-Step Guide and Tips	17
Teaching Multiplication Technique: Step-by-Step Guide and Tips	18
Teaching Task Unification Technique: Step-by-Step Guide and Tips	19
Teaching Attribute Dependency Technique: Step-by-Step Guide and Tips	21
SIT Innovate! Web App: Step by Step (Illustrated)	22

The Six SIT Method Axioms:

1. *Creativity is not random; it is a logical process:*

Brainstorming makes arriving at creative outcomes inefficient and has one of the lowest success rates among pathways to innovation. Rather, applying a proven and repeatable methodology, Systematic Inventive Thinking (SIT), consistently yields creative success.

2. *Creativity can be practiced and learned:*

Creativity, like most other human endeavors, is based on repeatable patterns. By employing five basic techniques—Subtraction, Division, Multiplication, Task Unification, and Attribute Dependency—individuals become creative.

3. *The keys to innovation are “hiding in plain sight”:*

Everything needed to drive innovation exists within easy reach, in the components of the “Closed World,” the logical methodology, and principles of SIT.

4. *Innovation is about adding value:*

Change for the sake of change is not innovation. Regardless of which technique is used, the ultimate test should always be “does this change add value?”

5. *Contradictions are a path, not a stumbling block, to creativity:*

Contradictions—oppositional situations that appear to be impossibilities—offer especially good opportunities to be creative. Applying SIT to contradictions can break the “weak link” that connects two opposites, leading to innovative win-win solutions.

6. *Creativity hides Inside the Box:*

A product, process, or service’s immediate environment (the “Closed World”), which consists of both internal (to the product) and external (related to the product) components, is the source of almost all successful creative solutions.

The Five SIT Techniques

1. **Subtraction:** Subtraction occurs by removing a believed essential component from a product, service, or process and then examining what the new product, service, or process would look like—in other words, the benefits it would deliver with just the remaining components
2. **Division:** Division involves breaking up an existing unit into portions, then reconfiguring those portions to either create a new benefit or uniquely deliver existing benefits.
3. **Multiplication:** Multiplication means isolating one component in the Closed World of a product or service, multiplying that component one or several times, and then ascribing a unique characteristic to each of the multiplied components to identify a new source of value.
4. **Task Unification:** When innovating through task unification, all components and features should be kept in their current configuration, but one component takes on an additional responsibility within the Closed World—unifying tasks that were previously independent of each other.
5. **Attribute Dependency:** In innovating through attribute dependency, two previously unrelated attributes or characteristics are made dependent on each other in a way that adds value. As one thing changes, another thing changes.

The Four SIT Method Differentiators:

1. The SIT Method alleviates unnecessary performance pressure caused by the misconception that creativity is a gift that is not accessible to all.
2. In *Inside the Box*, Drew Boyd and Jacob Goldenberg prove the opposite—that more, better, and quicker innovation comes from inside the parameters of a familiar environment, or the “Closed World.” Foundational to this method is that creativity is in fact based on logic, patterns, and the principle of “function follows form” and can be unleashed and repeated through the use of five basic techniques: subtraction, division, multiplication, task unification, and attribute dependency.
3. Based on patterns that innovators have used for thousands of years, the five patterns form the basis of the techniques constructed within the SIT Web App.
4. The Principle of Constraints forces people to work within tight constraints which is essential to creative output. People must create non obvious connections in a systematic manner. The App allows you to be efficient in deploying the SIT method.

Three Examples of SIT Techniques in the Marketplace

1. **Multiplication:** A Procter and Gamble marketing team wondered if the multiplication technique could help expand the Febreze brand into new categories, especially air care. Air care products infuse pleasant scents into your home, either to cover up unpleasant odors or simply to make the home smell better overall. After making a list of key components, the team selected the container to multiply. Following the method, they copied the container and created a plug-in device with two separate tanks to hold the liquid perfume. Next, they needed to change the copied one in some meaningful way. The end product? A pulsing plug-in container with Febreze on one side and a liquid perfume on the other. The product's oil warmer would alternate between two complimentary scents all day, ensuring users could smell the product they purchased. The product was so successful; it nearly doubled P&G's market share in the air freshener category.

2. **Attribute Dependency:** A multinational team at Nestea applied the attribute dependency technique to expand the tea category. The variables the team selected for attribute dependency analysis was time, or more precisely, seasonality, and temperature of the tea. The fixedness the team had to break was thinking people drink iced tea in the summer that needed to be served cold. What if the team could develop a beverage that could be quickly heated in a microwave, but the taste was richer than tea made from pouring boiling water over a tea bag? The Nestea Winter Collection was born. Iced tea products designed to be enjoyed in the winter by being consumed at room temperature or even heated. The new product line reversed the typical slump in winter sales by creating a brand new market. Nestea saw a 10% jump in revenue.

3. **Task Unification:** In November 1999 Newell Rubbermaid was struggling to figure out the best marketing strategy for its new movable outdoor storage unit. The firm had high hopes for the product, a tough, weather-resistant, movable container that could store cushions, pillows, and other furniture accessories from homeowners' backyards. The unit is assembled by the customer, and therefore has to be light enough to be easily transportable from the consumer's car to the backyard or wherever on the property the unit will be located. At the same time, it has to be strong enough to withstand wind gusts that would otherwise upend it or blow it across the yard. Newell Rubbermaid put together a team that used Systematic Inventive Thinking and solved its problem by designing two separate units: the storage unit and its base. To ensure that the base was both easy to carry and stable after assembly, the company manufactured a hollow base that consumers filled with water or soil after positioning it on their deck or in their yard.

Instructors' Introduction to Course Syllabus: A Two-step Approach:

Instruction and the SIT Innovate! Web App

The following is a sample course syllabus for a stand-alone, three full-day course on SIT/Innovation.

Best Practices for Instructors: The Course

SIT is best taught when students experience using it and the surprise that comes with successful generation of ideas using a systematic method. Faculty must trust the method and allow students to follow the process to achieve results.

€ Start with subtraction. This method is counterintuitive and the most surprising; generates excitement and belief in the SIT objectives.

€ Be on the lookout as students will quickly encounter their “fixedness.” Fixedness is the tendency to see objects only in a traditional way or use them as they have been traditionally used.

€ Have students use the *Innovate! Web App*, as digital natives can learn the techniques well when presented in a technological format.

€ Meta cognition is key. Have students reflect after each exercise on how they are using their brain in a different way, with different thought processes.

€ It is important to plug the SIT module into your curriculum where novel idea generation skills are critical. For some courses, it might be best to teach at the beginning to enrich the rest of the modules in the curriculum.

€ Student groups of four to six are good, but the exercises will be more fruitful and the students will be more productive if the groups break into pairs. A team of six would have more productivity and more ideas if they work in three groups of two.

€ When selecting a product or service for the group project, the product or service should be understood by all students in the group. Do they understand how it operates and all of its components? Do they have enough knowledge of how the product or service works? For ex-

Instructor's Tip*

If using the SIT method within a larger course, focus on one or two of the techniques rather than all five. Better to limit, rather than dilute. If you do this, I would recommend subtraction and task unification as the two techniques to illustrate.

ample, students like to pick a microwave oven, but most students have no idea how a microwave works. A car is too big, and many do not know how an engine works. We recommend picking something in the car like a seat, radio, etc. The iPhone is not recommended because it has too broad of a Closed World. Zoom in on one part of the phone they understand, e.g., the email function. Typically, not every member in the group understands the complex software. It's highly encouraged to pick something that everyone knows. Sometimes the best way to do this is to look at a picture of product or service online. Everyone must be aligned on the attributes and components so that all have the exact same starting point.

€ Good project ideas include household appliances (blenders, grills, luggage, home security system, etc.) bicycle, rollerblades, figure skates, hotel (big in size, but doesn't have too many components).

Key Terms

Components – physical things of a product or service.

- **Internal components** – those attached directly to the product or service. Good examples of internal components include: handle on a refrigerator, antenna of a car, strings on a guitar, and legs on a chair.
- Poor examples of internal components usually occur because the students confuse an attribute with a component. The color of a refrigerator is not a component; it is an attribute. The size of a house or weight of a bowling ball are attributes, not components.
- **External components** – not attached, but immediately around. Some techniques require just internal components; some techniques require both.
- Good examples of external components include: food in the refrigerator, amplifier attached to a guitar, suitcase in the trunk of car, or a pillow on a chair.

How the *Innovate! Web App* will help: When applying the SIT method, only correlate internal attributes to internal attributes and external attributes to external attributes. The App will automatically apply these correlations.

Attributes – characteristics or properties of a product or service, usually intangible, variables that can change.

- **Internal attributes** are under a manufacturer's control.
- Good examples of internal attributes are characteristic under a manufacturer's control, such as the color of a product, size, dimensions, and price.
- **External attributes** are not under a manufacturer's control.
- Good examples of external attributes are weather, time of day, consumer characteristics (e.g. age, gender), purpose or occasion for use.

Final Exam

- A sample final exam used by one of the co-authors is included in the Appendix
- Make sure students pick a product they understand with sufficient number of components and attributes. Have them pick something they have an interest in, such as a hobby or a product from their work.
- Students should work alone, not in groups.
- Have them use the web app for the final exam. When students finish the exam, they can download it as a .pdf file and sent it to the instructor for grading.

Sample Course Syllabus: A Two-step approach:

Instruction and the SIT Innovate! Web App

What You Will Get Out of This Course

This course focuses on how to create value and growth through innovation in new and existing markets. You will learn the skills of innovation and how to apply those skills within the context of a marketing strategy framework. You'll apply innovation methods across a wide variety of product and service categories. The course will be taught using interactive workshop methods and techniques. You'll first experience these facilitation techniques while learning innovation, and then learn and practice these techniques so that you can apply them routinely throughout your graduate experience and beyond.

Student Learning Outcomes

1. Define the five templates of innovation and how each is used in the innovation process
2. Identify the principles of systematic innovation
3. Identify the limitations and weaknesses of traditional brainstorming
4. Produce unique ideas and concepts by applying each of the innovation templates to a specific category of products or services
5. Relate innovative concepts to a marketing strategy framework
6. Compile a hypothetical product or service catalog using concepts generated in the course to represent a portfolio growth strategy for a company
7. Describe a method of measuring innovation
8. Apply group facilitation techniques to lead small groups through the use of innovation templates

Class Format

Take a look at the syllabus and you will see a pattern in our approach to this course. First, you will learn the overall model of this method, called Systematic Inventive Thinking. Students will be innovating within the first 10 minutes of the course. Then, we will learn the five techniques. Each technique will be taught the same way: we will begin with a story or exercise, define the technique, show the steps of the technique, do an example together as a class, do an example working in pairs or groups of three, show examples of products created with that technique, have you identify products that conform to that technique’s pattern. The goal of this approach is to let you learn and apply systematic innovation tools so that you can innovate any product or service ... on demand.

Instructor’s Tip

Using the *Innovate! Web App* in the classroom gives students a structured and organized way to generate ideas with SIT and keep track of them. As you teach one of the five SIT techniques, you can have students use their laptops or tablets to follow along and apply the technique in real time.

Course Schedule

Date	Topics	Readings	Assignments
Day 1	<ul style="list-style-type: none"> • Systematic Innovation • Principles and Tools • Subtraction • Task Unification • Multiplication • Group Project: The Dream Catalog 	<ul style="list-style-type: none"> • Inside the Box: Intro, Chapter 1 • “Finding Your Innovation Sweet Spot” • “Flawed Tools” 	<ul style="list-style-type: none"> • Begin Group Project
Day 2	<ul style="list-style-type: none"> • Division • Attribute Dependency 	<ul style="list-style-type: none"> • Inside the Box: Chapters 2, 4, and 5 • “The Myth of Brainstorming” 	<ul style="list-style-type: none"> • Group Project
Day 3	<ul style="list-style-type: none"> • Tools of Advertising • Team Presentations • Final Exam 	<ul style="list-style-type: none"> • Inside the Box: Chapters 3 and 6 • “A Structured, Facilitated Team Approach to Innovation” • “What Innovation Is” 	<ul style="list-style-type: none"> • Prepare team Presentations • Group Project

Course Material: (to be read before the assigned class date)

1. Boyd, Drew, and Jacob Goldenberg. *Inside the Box: A Proven System of Creativity for Breakthrough Results*: Simon & Schuster, 2013.
2. Boyd, D. (2012). www.innovationinpractice.com
3. Schirr, G. R. (2012), Flawed Tools: The Efficacy of Group Research Methods to Generate Customer Ideas. *Journal of Product Innovation Management*, 29: 473–488.
4. Mongeau, Paul A. (1993). The Myth of Brainstorming. ERIC, ED357399, 1-24.
5. Boyd, D. (2007). A Structured, Facilitated Team Approach to Innovation. *Organization Development Journal*, Special Edition, Fall 2007, Volume 25: Number 3. 119-122.
6. Smith, H. (2005). What Innovation Is. CSC White Paper. European Office of Technology and Innovation.

Performance Evaluation:

Component	Points
Participation	100
Group Project	400
Final Exam	500

Grading Scale:

- A: 94-100%
- A-: 90-93%
- B+: 87-89%
- B: 84-86%
- B-: 80-83%
- C+: 77-79%
- C: 74-76%

1. Class Participation (10%): Due to the compressed time schedule for this course, absence from class or late work cannot be accepted unless due to illness or natural disasters. Class participation is evaluated according to the following guidelines:

Outstanding: Contributions in class reflect exceptional preparation. Ideas offered are always substantive and provide one or more major insights as well as a fruitful direction for the class. Arguments are well-supported (with tangible evidence) and persuasively presented. If this person were not a member of the class, the quality of the discussions would be diminished significantly. (100 points)

Good: Contributions in class reflect thorough preparation. Ideas are usually substantive, provide good insights, and sometimes a fruitful direction for the class. Arguments, when presented, are generally well-supported and are often persuasive. If this person were not a member of the class, the quality of the discussion would be diminished. (90 points)

Adequate: Contributions in class reflect satisfactory preparation. Ideas offered are sometimes substantive, provide generally useful insights, and occasionally offer a new direction for the class discussion. Arguments are sometimes presented and are fairly well-supported and sometimes persuasive. If this person were not a member of the class, the quality of the discussions would be a little diminished. (80 points)

Non-participant: This person contributes little to the class. If this person were not a member of the class, the quality of the discussions would not be significantly changed. (50 points)

2. Group Project: (40%) “The Dream Catalog”

A company’s catalog of products is the strongest statement of brand positioning that a company can make. So imagine you could peek into the future and see a copy of a company’s product catalog five years from now. What would it look like? What if you could design it now? What would you put into it? These are the questions that confront you when you create and use a clever innovation tool called the Dream Catalog.

The Dream Catalog is a hypothetical company catalog from the future...well into the future, beyond the next business cycle. It is far into the future so that it captures the innovative thinking and imagination of today’s managers. It stretches a company’s thinking about its fu-

ture, and it provokes a healthy discussion about possible company direction. A good Dream Catalog causes tension.

A Dream Catalog helps a company in several ways. It sets direction. It suggests how the company is going to add and remove products from the line over time. It forces the marketing team to reconcile product line strategy. It provides placeholders for new discoveries, inventions, and even acquisitions. It provides a sense of prioritization of what should be developed and in what order. It can even help forecast revenues.

Best of all - it rewards and encourages innovation. The Dream Catalog serves as the focal point for company-wide innovation efforts. Employees strive to come up with product and service ideas that “make it” into the Dream Catalog. As the catalog takes shape, employees see how their future is taking shape. It guides their innovation efforts even more. Leaders can use the catalog as a motivational tool. “Let’s turn this dream into reality...for our customers and our future.” A good Dream Catalog creates excitement and a sense of purpose.

The group project is a comprehensive exercise to apply systematic innovation tools to develop a futuristic Dream Catalog for an assigned category. Groups of four or five students will be formed before class starts.

Here is a quick snapshot of how to do it:

As the class learns each of the five techniques of innovation, groups will work together and apply the technique to their specific category to create new-to-the-world inventions. Groups will collect and catalog ideas throughout the process. Once all the ideas are collected, they will apply a strategic marketing framework to their ideas to determine which ones would create an exciting and valuable portfolio of new products for a company in that category. They will create a physical catalog with product photos, prices, features, and benefits. Group presentations will occur on Day 3.

Catalogs will be graded on the following:

- 25% on the usefulness of the ideas
- 25% on the novelty of the ideas
- 25% on the pipeline diversity of the ideas (incremental, breakthrough, transformational)
- 25% on the catalog presentation of the ideas (visual and text)

3. Final Exam (50%): The exam will test the students' understanding of the application of the innovation techniques. Students will be assigned a product randomly. They will take the assigned product and apply the five templates of innovation to create five new-to-the-world concepts in that category. The concepts will be graded on the following:

- 20% for using the technique correctly
- 20% for creating something novel
- 20% for creating something feasible
- 20% for creating something useful
- 20% for creating something surprising (within the Closed World)

Teaching the Subtraction Technique Using the *Innovate! Web App*: Step-by-Step Guide

1. Have students enter components and attributes for their project into the web app.
2. Select the subtraction tool, and the app will automatically subtract a component randomly.
3. Students visualize what can be created by subtracting this component.
4. Identify the positive attributes, benefits and values of the change.
5. Is this innovation feasible? Can you create it? If not, can you modify the idea so it becomes feasible?
6. If not, then advance within the app and go to next configuration.
7. Students save PDF and then email PDF to the instructor.

Tips: Teaching Subtraction

To get the best results, people should consider the following when using the subtraction technique:

- Avoid the tendency to remove “problem” components.
- Make sure to take out essential components.
- Do not jump to replace the removed component.
- Resist “cognitive dissonance” and trying to explain the new configuration.
- Do not equate removing essential components with simple “unbundling.”
- Expect a lot of resistance when first using subtraction, because the students doubt the process can really work. They think subtracting something essential “breaks” the product. This method forces students to really think what is the benefit, not whether the product is feasible.
- The app will create absurd configurations, and that’s ok; trust the process.
- Expect a lot of laughter. This is a good sign. Students are engaged and questioning their fixedness. Experiencing the technique in the right way is important, but it may also be important for faculty to help manage their “fixedness” and frustration and push them over the hump.

Teaching Division Technique Using the *Innovate! Web App*: Step-by-Step Guide

1. Have students enter the components and attributes for their project.
2. Select the Division tool, and the app will automatically select a component and prompt the students to imagine it is divided out and rearranged somewhere else back in to product or service. For example, the compressor of the refrigerator is divided out and placed outside the house.
3. Students visualize what can be created by dividing this component.
4. Identify the positive attributes, benefits and values of the change.
5. Is this innovation feasible? Can you create it? If not, can you modify the idea so it becomes feasible?
6. Students save PDF and then email PDF to. The instructor.

Optional: On a separate piece of paper, have students hand draw a picture of virtual product, then scan and email or turn in hard copy.

Tips: Teaching Division Technique

- Division is great for processes and services. Have students list the steps of a process or service in a chronological order and the App will force them to imagine taking a step and putting it somewhere else in process.
- If they're having trouble, they probably do not have an aligned definition of their Closed World.
- Division tends to break structural fixedness, hard for people to imagine something that is different than they are used to seeing, a chair with three legs, hose with a nozzle on end.

Teaching Multiplication Technique Using the *Innovate! Web App*: Step-by-Step Guide

1. Have students enter components and attributes for their project.
2. Select Multiplication tool and the App will automatically multiply one component at a time randomly.
3. Students visualize what can be created by multiplying this component.
4. Identify the positive attributes, benefits and values of the change.
5. Is this innovation feasible? Can you create it? If not, can you modify the idea so it becomes feasible?
6. Students save PDF and then email PDF to the instructor.

Optional: On a separate piece of paper, have students hand draw a picture of virtual product, then scan and email or turn in hard copy.

Tips: Teaching Multiplication Technique

- Multiplication disrupts your fixed view of the world by providing a structured method for creating new things that you won't at first understand.
- Practice modifying the multiplied components. Practice improves your judgment about what to multiply and how to modify it.
- Common pitfall – the students forget to make a qualitative change in the multiplied component. They put the multiplied component in the same location, side by side with the original component, no change, same properties, just made an exact copy. For example, they multiply a door handle, both in the same location and each one performs the same function. They need to change it in a counterintuitive way that does not make sense and find the benefit. Sometimes they have the benefit in mind before they actually make the change, do it the other way around.
- Multiplication is useful for products and services with few components.

Teaching Task Unification Technique Using the Innovate! Web App: Step-by-Step Guide

1. Have students enter components and attributes for their project.
 2. Select the Task Unification tool, and the app will automatically take a component and assign it a job of another component randomly.
 3. Students visualize what can be created/benefits of this new configuration.
 4. Identify the positive attributes, benefits, and values of the change.
 5. Is this innovation feasible? Can you create it? If not, can you modify the idea so it becomes feasible?
 6. Students save PDF and then email PDF to the instructor.
- Optional: On separate piece of paper have students hand draw a picture of virtual product, scan and email or turn in hard copy.

Tips: Teaching Task Unification

You can apply this technique in three general ways:

- **“Outsourcing”** – Many technology companies devote a lot of time to creating the software or functions for their machines. Conversely, many outsourcers write iPhone apps that people then purchase.
- **Making the best of what you have** – Take something in your closed world and give it an additional function. Scottish theater director John Doyle did this with stage musicals. Rather than hiring an orchestra, Doyle had the actors play instruments. The original production was a hit, and other companies staged musicals for less money.
- **Moving from the “inside out”** – Take functions previously performed by something outside the object you’re innovating, and find an internal element that completes this function. For example, a medical equipment company wanted to improve its training. It created engagement and efficiency by shifting some training functions from the sales force to the customers.

- Typically, we recommend introducing this technique after subtraction because students tend to have more fun with this technique after they have learned to trust the process with subtraction methods.
- Task Unification is a great method when there are tight restraints around a product or service, creates great efficiencies.
- It's very important to define the Closed World, as that will define the components. It is important that all team members have an agreed upon understanding of what the closed world is, dictates components, internal and external.
- Task Unification forces them to break functional fixedness – making a component do something that it wasn't designed to do, leading to surprising results.

Teaching Attribute Dependence Technique Using the *Innovate! Web App*:

Step-by-Step Guide

1. Have students enter the attributes for their project, internal and external.
2. Select the Attribute Dependency tool, and the app will automatically combine two attributes and force the students to imagine the two attributes have an interaction: as one changes, the other one changes. For example, transition sunglasses.
3. Students visualize what can be created by this configuration.
4. Identify the positive attributes, benefits and values of the change.
5. Is this innovation feasible? Can you create it? If not, can you modify the idea so it becomes feasible?
6. Students save PDF and then email PDF to the instructor.

Optional: On a separate piece of paper, have students hand draw a picture of virtual product, scan and email or turn in hard copy.

Tips: Teaching Attribute Dependency

The attribute dependency process can yield very innovative solutions, revitalizing dull categories and creating diversity where there was uniformity. However, there are pitfalls people should watch out for as well:

- Do not confuse attributes with components.
- Only create dependencies where there is the ability to control them. For example, you correlate internal to external, internal to internal but the app will not correlate external to external.
- This technique is the hardest for students to grasp because it is abstract; it will help them break relational fixedness. It is hard to imagine two attributes in their environment suddenly having a connection that wasn't there before.
- Attribute dependency tends to create products/services that are smart and react to the environment in a novel way, bringing new value.
- It's important to always include time as both an internal and external attribute. Also, include price as internal and external attribute.

SIT *Innovate! Web App*

Step by Step (Illustrated)

The *Innovate! Web App* facilitates the use of Systematic Inventive Thinking (SIT). It explains each of the five techniques (Subtraction, Division, Task Unification, Multiplication, and Attribute Dependency) and allows users to generate creative ideas and innovations.

The five techniques in this app artificially create unique combinations and configurations that you were not likely to have thought of on your own. Once the App creates these “solutions,” you then have the job of imagining what the solutions can do that is new and innovative. Do this by asking, “What would this configuration be good for? Who would potentially benefit from it and in what situations?”

Instructor’s Tip

The purpose of the SIT App is for students to experience what it is like to create an idea in a systematic way and to get experience with the methods so they can continue to apply them in everyday life.

User notes for the *Innovate! Web App*

Registration Screen

Users can self-register. Users can use promo code if available to access the app or they will need to enter payment if there is no code available.

Login Screen

Users can log in by entering their login credentials.

Forget Password

Users can get a temporary password via email by entering their valid email.

Reset Password

This screen will show only to the existing user.

Payment Screen

This screen will be the first screen users see after logging in, when they have not made a payment OR haven't not used a promo code. Users will need to complete details. After their payment entered, users will be redirected to the "home" screen as the default.

Home

After a successful login, users will see the home screen. It contains "About the App," "How to use App" and "Books/Publications on Innovation."

How to Use the App

This screen contains the instructions for how to use The *Innovate! Web App*.

INSIDE THE BOX Home How To Use the App Learn a Technique Start New Project My Projects More Owen Serey

How To Use the App

Systematic Inventive Thinking

Systematic Inventive Thinking is a comprehensive suite of Thinking Tools, Principles, Facilitation, Project Management, and Organizational Innovation programs. The five unique techniques in this app are the core of the SIT method, and were developed through rigorous research, studying thousands of patents and inventive solutions. Visit us at www.sitsite.com to learn more.

The Principle of Function Follows Form

The SIT Method is unique because it is the reverse of the traditional way of approaching innovation. Instead of starting with a problem and looking for a solution, this method makes you start with a hypothetical solution and find a problem that it solves. This way of thinking is called function follows form. The five techniques in this app artificially create unique combinations and configurations that you were not likely to have thought of on your own. Once the app creates these "solutions," you then have the job of imagining what it can do that is new and innovative. Do this by asking, "what would this configuration be good for, who would potentially benefit from it and in what situations?"

Using the App

1. Select **Learn a Technique** to understand how each one works.
2. Go to **My Projects** and look at the Refrigerator example and the five sample ideas generated by the app.
3. Start a **New Project** by entering the **Name** of a product or service that you want to innovate (for example - a toaster, a TV, a recruiting process, and so on) and a brief **Description**. Hit **Create a New Project** button.
4. Type in the major components and attributes. When listing attributes, we suggest that you always include the attributes of price and time, though it's not required. Be sure to hit the Save button.
5. Once you have your components and attributes loaded, select a technique and let it create new configurations one component or attribute at a time. At first, the new configuration may seem absurd and bizarre. *This is perfectly normal. Don't let it discourage you!*
6. Read the **Virtual Product**. Use the **Principle of Function Follows** and ask yourself these helpful questions: Could I sell this to someone? Who would want it and why? What benefit are they getting out of it? Who else could benefit and where? At work, home, somewhere else?
7. If you like the idea, hit the **Like It** button to write a description of it. If not, hit the **Next Idea** button to get a new **Virtual Product**. Repeat through all the components and attributes.
8. Share your ideas via Email, Facebook, or Twitter.

© Copyright 2016 Drew Boyd and Jacob Goldenberg - All Rights Reserved Developed by NextGen Invent Corporation

Learn A Technique

This screen defines each technique.

Tip for Instructors

Select *Learn a Technique* to understand how each one works.

The screenshot shows the 'Learn a Technique' page of the 'Innovate! INSIDE THE BOX' web application. The navigation bar includes 'Home', 'How To Use the App', 'Learn a Technique' (active), 'Start New Project', and 'My Projects'. The main content area is titled 'Learn a Technique' and displays five technique cards: SUBTRACTION, MULTIPLICATION, DIVISION, ATTRIBUTE DEPENDENCY, and TASK UNIFICATION. Each card has a brief description and a 'more...' link. For example, the Subtraction card states: 'The Subtraction Technique eliminates components of the product or service one at a time so that you can imagine all the remaining components more...'. The footer contains copyright information for 2016 and is developed by NextGen Invent Corporation.

Start New Project

On this screen, users can create projects and add components and attributes.

The screenshot shows the 'Start New Project' page of the 'Innovate! INSIDE THE BOX' web application. The navigation bar includes 'Home', 'How To Use the App', 'Learn a Technique', 'Start New Project' (active), 'My Projects', 'More', and the user name 'Owen Serey'. The main content area is titled 'Start New Project' and features a 'Delete Project' button. Below this, there are several technique icons: Subtraction, Multiplication, Division, Attribute Dependency, and 'I'm Feeling Lucky'. A modal dialog titled 'Project' is open, containing fields for 'Name' and 'Description', and a 'Create a New' button. The background shows a table for 'Components' and 'Attributes'.

My Projects

On this screen, users can find a project or any project which is assigned to them in a group. They can create two types of projects:

1. Single
2. Group: a group project contains N number of people; the user who creates the group can assign his/her particular group to any existing user.

Note: The user who created the project is the only one who can edit/ delete the group. Other users can only download the PDF by clicking the PDF icon.

Tip for Instructors

Go to *My Projects*. Look at the Refrigerator example and the five sample ideas generated by the app.

The screenshot shows the 'My Projects' page of the 'Innovate! INSIDE THE BOX' web application. The navigation bar at the top includes 'Home', 'How To Use the App', 'Learn a Technique', 'Start New Project', 'My Projects', and 'More'. The user 'Owen Serey' is logged in. The main content area is titled 'My Projects' and contains a 'Current Projects' table with the following data:

Project Name	Description	Last Modified D...	Action
Refrigerator	Ideas to improve refrigerators	08-25-2016	

To the right of the table is a 'New Project' form with the following fields:

- Name:
- Description:
- Project Type:
- +Add button
- Create a New Project button

At the bottom of the page, there is a copyright notice: '© Copyright 2016 Drew Boyd and Jacob Goldenberg - All Rights Reserved' and 'Developed by NextGen Invent Corporation'.

myproject-1.pdf

Open Create [Icons] Customize

1 / 2 66.7% Tools Fill & Sign Comment

Innovation Project Report

Name : Owen
Date : 9/8/2016 2:53:45 PM
Project Name :
Description :

Attribute List :
Component List :

1.Idea Name:Door Inside Door
Idea Description : A refrigerator with a door that is in two parts where the first opens to reveal only small items like soda cans, and the second one opens to reveal the complete refrigerator.
Benefit List :
More storage space
More convenient to find popular items like beverages
Notes List :
May require special hinge design for two doors.

2.Idea Name:Distributed Cooling
Idea Description : A refrigerator with a compressor that is placed outside the home so that it can cool other parts of the kitchen like the pantry or specific drawers.
Benefit List :
Easier to provide service to the compressor
More storage in the refrigerator
Less heat and noise in the kitchen
Notes List :
May be able to tie into existing home air conditioner

3.Idea Name:Family Meal Planner
Idea Description : A refrigerator that suggests a daily meal plan based on what food is present inside.
Benefit List :
Makes better use of food
Saves time planning and deciding on what to eat
Notes List :
May require a database of possibilities given food types and amount available

4.Idea Name:Clear Door
Idea Description : A refrigerator with a transparent door to see what food is inside without having to open it.
Benefit List :
Saves energy by not opening the door
Saves time not having to open the door

Notes List :
May require special glass for proper insulation

5.Idea Name:Smart Shelves
Idea Description : A refrigerator with shelves that know what kind and how much food is on it so that it can help create a shopping list, perhaps texted to you while you are in the grocery store.
Benefit List :
Saves time preparing a shopping list
Manage food better
Notes List :
May require food detection or bar code scanning capability

‘Like It’ Page

When the user clicks on any technique in “start new project,” such as Subtraction, Multiplication, Division, Task Unification, Attribute Dependency and I’m Feeling Lucky, the user is redirected to the Like It page with the selected technique functionality.

Tip for Instructors

When listing attributes, we suggest that you always include the attributes of price and time, though it’s not required. Be sure to hit the Save button.

The screenshot shows the 'Like It Page' for a 'Book project (Multiplication)'. The page includes a navigation bar at the top with links for Home, How To Use the App, Learn a Technique, Start New Project, My Projects, and More. The main content area has a title 'Book project (Multiplication)' and a subtitle 'How to write a book'. Below this is a description of the project, a 'Like It' button, and a table of components. The table has columns for 'Ideas', 'Action', and 'Components'. The 'Components' column lists 'love', 'hard work', and 'research'.

Ideas	Action	Components
		love
		hard work
		research

Tip for Instructors

Once you have your components and attributes loaded, select a technique and let it create new configurations one component or attribute at a time. At first, the new configuration may seem absurd and bizarre. This is perfectly normal. Don't let it discourage you!

Tip for Instructors

Read the Virtual Product. Use the Principle of Function Follows Form and ask yourself these helpful questions: Could I sell this to someone? Who would want it and why? What benefit are they getting out of it? Who else could benefit and where? At work, home, somewhere else?

Note: When the user clicks on “I’m Feeling Lucky” technique, system will randomly choose one of the five techniques.

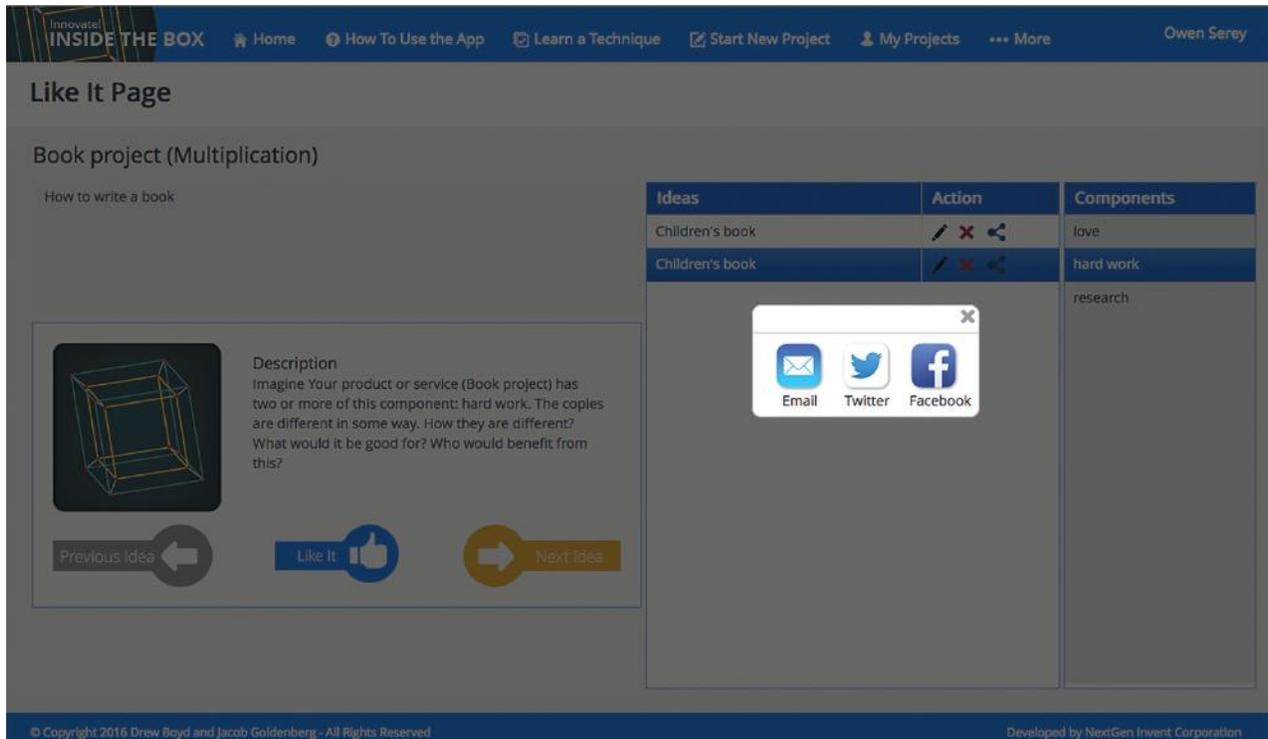
Idea

When a user clicks on the “Like It” button on the “Like It” page, he/she will be redirected to the “Idea” screen where he/she can create an idea and add its benefit and notes.

Then the user will click “Done, Continue Innovating” to save the idea. If a user does not want to save an idea, then he/she will click on the “actually not a good idea” button.

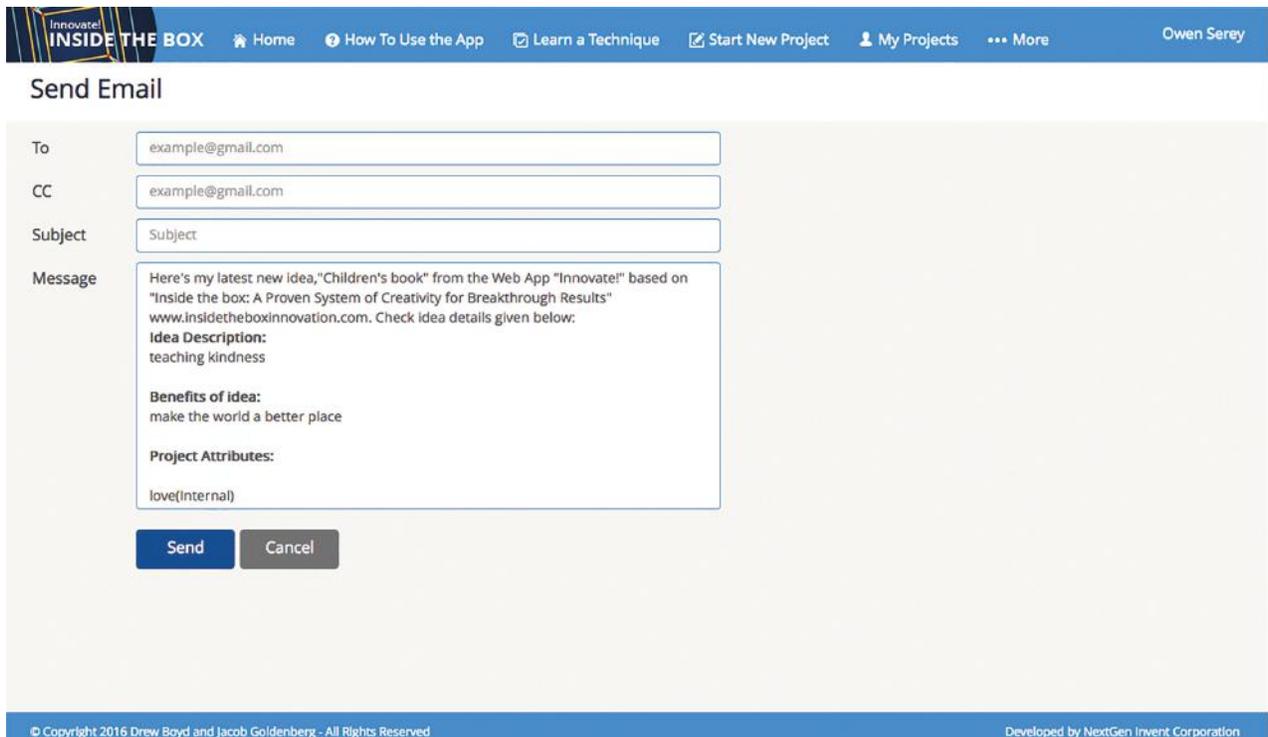
The screenshot shows the 'Idea' creation interface. At the top is a blue navigation bar with the 'Innovate! INSIDE THE BOX' logo and menu items: Home, How To Use the App, Learn a Technique, Start New Project, My Projects, and More. The user's name 'Owen Serey' is in the top right. Below the navigation bar is the 'Idea' title. The main area is titled 'New idea' and contains a 'Description:' field with a pencil icon. A tip bubble says: 'Imagine your product or service (Book project) with all of its components, but it does not have this one: hard work. What would it be good for? Who would benefit from this?'. Below the description are two columns: 'Benefits' and 'Notes'. Each column has a '+Add' button above it and an 'Action' button to its right. At the bottom of the form are two buttons: 'Actually, Not a Good Idea' (grey) and 'Done, Continue Innovating' (blue). The footer contains copyright information: '© Copyright 2016 Drew Boyd and Jacob Goldenberg - All Rights Reserved' and 'Developed by NextGen Invent Corporation'.

Users can share ideas by clicking on the desired/applicable icon, such as by email, Twitter and Facebook.



Send Email

Users can email the project idea with the benefits of idea, project attributes and project components to anyone.



More

If a user clicks on the “More” button, there are six screens:

1. Terms and Service
2. About the Authors
3. Buy the Book
4. Privacy Policy
5. Refund Policy
6. Group Management

Users can create their own group by adding existing users. This screen will also allow users to see members of other groups. The user who is the administrator of the group is the only one who can edit/delete the group. Other users can only leave the group.

To edit their profile or change their password, users should move the cursor to user name as shown in menu bar.

Edit Profile

Users can edit their profile details but cannot change their email.

Change Password

Users can change password from their old password to a new password.

User List

Administrator can delete any user by clicking the “X” sign. **This screen will be visible to only the administrator.**

Subscription List

When users cancel their subscription, they will appear on the subscription list screen; the administrator must approve cancellation of subscription. **This screen will be visible to only the administrator.**

Cancel Subscription

The “Cancel Subscription” screen is visible to only the user. Users can cancel their subscription by entering their login credentials.

Appendices

Sample Final Exam:

MKTG7014 “Innovation Tools”

FINAL EXAM

Name: _____

Score: _____/500

Part A

It is your first day on the job following graduation from UC. You landed a dream job for the company you have always wanted to work for. Your new boss comes to see you and says,

“Congratulations. We’re glad to have you on board. The human resources manager who hired you tells me you have been trained in an innovation method called SIT. Our company desperately needs new products and services to get ahead of the competition. Can you create some really amazing concepts for us?”

Instructions:

Select a company you want to work for after graduation (write it here):

Select one of its key products or services (write it here):

Using all five techniques of Systematic Inventive Thinking, develop five different novel concepts for the selected product or service. Be sure to show how your concept originates directly from each tool. Draw the concept.

50 points each:

- 10 points for using the technique correctly (component lists, etc.)
- 10 points for creating something novel
- 10 points for creating something feasible
- 10 points for creating something useful
- 10 points for creating something surprising (within the Closed World)

1. Subtraction:

a. Component List:

b. Virtual Product:

i. As is:

ii. With replacement:

c. Benefits/Target Audience:

d. Name of your concept:

e. Feasibility:

f. Potential Challenges or Issues:

2. Task Unification:

a. Component List

b. Virtual Product:

c. Benefits/Target Audience:

d. Name of your concept:

e. Feasibility:

f. Potential Challenges or Issues:

3. Multiplication:

a. Component List:

b. Virtual Product:

c. Benefits/Target Audience:

d. Name of your concept:

e. Feasibility:

f. Potential Challenges or Issues:

4. Division:

a. Component List:

b. Virtual Product: (and which type of Division is it?)

c. Benefits/Target Audience:

d. Name of your concept:

e. Feasibility:

f. Potential Challenges or Issues

5. Attribute Dependency:

a. Attribute Matrix

b. Virtual Product:

c. Benefits/Target Audience:

d. Name of your concept:

e. Feasibility:

Part B

Identify and describe an example of each of the five patterns of SIT in a smartphone (100 points).

Part C

Write a brief memo to your new boss explaining why your company should use Systematic Inventive Thinking instead of brainstorming. (150 points)